in only about a two-fold increase in the amount absorbed.

It is concluded that sulphur in therapeutic amounts is selectively absorbed by rusted and mildewed areas of leaves. This selective absorption by diseased tissues (host + pathogen) may explain other cases of chemotherapy in plants and animals without invoking a differential sensitivity of host and pathogen to the therapeutic agent.

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Effect of Organic Compounds on *Nitrosomonas*

The growth of nitrifying bacteria (*Nitrosomonas* and *Nitrobacter*) is usually inhibited by comparatively low concentrations of soluble organic substances, particularly amino-compounds[1–3]. A rather exceptional resistance was shown by a strain of *Nitrosomonas* that was isolated from farmyard manure and in other respects appeared typical (oval rods, motile by means of a single polar flagellum, no growth in ordinary bacteriological media, no nitrite formation except from ammonia).

This strain was able to nitrify ammonium sulphate in the presence of high concentrations of numerous organic compounds; for example:

Table 1

Compound	Highest concentration permitting nitrification	
	Per cent	Molar
Sodium formate	2·50	0·37
Sodium acetate ($3H_2O$)	6·00	0·44
Sodium succinate ($6H_2O$)	8·00	0·30
Glycerol	5·00	0·56
Glucose	10·00	0·56
Sucrose	20·00	0·58

The high concentrations of glucose were tolerated only if the sugar had been sterilized by filtration. Glucose sterilized by autoclaving, either separately or in the medium, prevented nitrification in concentrations of 1·5–2·5 per cent. Autoclaving at *p*H 7·5 seemed to cause a somewhat greater toxic effect than at *p*H 6·0 (cf. Stanier[4] and Sijpesteijn and Fåhraeus[5] on cellulose-decomposing bacteria). The inhibitory substance formed by heating was not removed by absorption with active charcoal; the effect might to some extent be due to partial conversion of the glucose into lævulose and mannose, since the latter compound particularly was far more toxic than glucose and caused strong inhibition at a concentration of 1·0 per cent.

Among nitrogenous compounds, glycine, alanine and asparagine were strongly inhibitory, suppressing nitrification in concentrations of 0·1–0·4 per cent (0·013–0·046 molar); but aspartic acid, glutamic acid and especially urea proved to be comparatively non-toxic:

Table 2

Compound	Highest concentration permitting nitrification		
	Per cent	Molar	mol.NH_2
Asparagine ($1\ H_2O$)	0·30	0·022	0·043
Aspartic acid	1·50	0·11	0·11
Glutamic acid	2·50	0·17	0·17
Urea	3·50	0·58	1·16

Nitrification in the presence of high concentrations of organic compounds could be started with a comparatively small inoculum (one drop of a 10–15 days old culture, diluted to one-tenth, in 25 ml. of medium). The compounds thus failed to inhibit growth as well as respiration.

Lees and Quastel[6] have observed a rapid nitrification of the oxime of pyruvic acid in soil culture, while free hydroxylamine was inhibitory; and very recently Quastel and Scholefield[7] have adduced evidence that the nitrification of oxime nitrogen is brought about by other organisms than *Nitrosomonas*. In agreement with this, the present organism nitrified neither free hydroxylamine, which was extremely toxic and suppressed the nitrification of ammonium sulphate in a concentration so low as 0·0003 molar, nor pyruvic acid oxime, which showed an inhibitory effect perhaps comparable to that of glycine. It thus appears most unlikely that the oxidation of ammonia to nitrite would proceed via hydroxylamine.

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Acidic Proteins of Cellular Nuclei

An alkali-soluble protein fraction, obtained from calf thymus nuclei, was reported by Mayer and Gulick[1]. Upon addition of acid to the alkaline solution, precipitation of this fraction occurred at about *p*H 6. Stedman and Stedman[2,3] obtained an alkali-soluble protein fraction, 'chromosomin', from several kinds of nuclei, including the heads of fish spermatozoa. Alkali-soluble protein fractions, which are precipitated when the solution is made acid, were recently reported to be present in boar spermatozoa[4].

We have found a similar protein fraction to be present in rat liver nuclei isolated by the Dounce method[5] and in 'chromosomes' isolated from calf thymus by the method of Mirsky and Ris[6]. The nuclei and 'chromosomes' were first extracted with 1·0 *M* sodium chloride solution to remove the nucleohistone. The resulting residue was extracted either with 0·1 *M*, 0·5 *M* or 1·0 *M* sodium hydroxide for 30 min. When the alkaline extracts from the nuclei or the 'chromosomes' were made acid with acetic acid, a protein fraction was precipitated from each extract at about *p*H 6. No further precipitate formed when the supernatant was acidified to *p*H 1.